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Gender Gaps in Unemployment Rates in OECD Countries

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In some OECD countries the male and female unemployment rates are very similar but in others (notably the Mediterranean countries) the female unemployment rate is much higher than the male. Explaining these cross-country differences is the subject of this article. We show that, in countries where there is a large gender gap in unemployment rates, there is a gender gap in both flows from employment into unemployment and from unemployment into employment. We conclude that differences in human capital accumulation between men and women interacted with labor market institutions is an important part of the explanation.

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I. Introduction

There is an enormous literature on gender gaps in pay and a vast literature on gender gaps in labor force participation rates (see Altonji and Blank [1999] for an overall survey and Blau and Kahn [2003] for a recent international comparison). Yet there is very little recent literature on gender gaps in unemployment rates. There was a literature on the subject in the United States in the 1970s and early 1980s (see, e.g., Barrett and Morgenstern 1974; Niemi 1974; Johnson 1983) but few recent papers—perhaps because the female and male unemployment rates in the United States have converged. But this convergence has not happened in all Organization for Economic Cooperation and Development (OECD) countries. Table 1 shows that, while the gender gap in unemployment rates (measured as the female minus the male) is small (or even negative) in some countries, there are others in which it is very large. For example, in the United Kingdom, the prime-age female unemployment rate is 1.1 percentage points below the male, while in Spain it is 11.8 percentage points above. It should be emphasized that the unemployment rates in

Table 1
Gender Gaps in Unemployment Rates among OECD Countries

	All Working Age (15–64)				Prime-Age (25–54)			
Country	Male	Female	Difference	Ratio	Male	Female	Difference	Ratio
Spain	11	22.91	11.91	2.08	9.2	21	11.8	2.28
Greece	7.56	17.92	10.36	2.37	6.2	15.2	9	2.45
Italy	8.67	15.71	7.04	1.81	6.6	12.7	6.1	1.92
France	9.66	12.96	3.3	1.34	9	12.6	3.6	1.4
Belgium					6.1	9	2.9	1.48
Netherlands	2.74	4.49	1.75	1.64	2.1	3.8	1.7	1.81
Luxembourg	1.77	2.68	.91	1.51	1.4	2.9	1.5	2.07
Germany	8.15	9.22	1.07	1.13	7.2	8.5	1.3	1.18
Denmark	4.69	6.54	1.85	1.39	3.7	4.9	1.2	1.32
Portugal	3.84	5.05	1.21	1.32	3.4	4.6	1.2	1.35
Finland	9.58	10.73	1.15	1.12	7.9	9	1.1	1.14
Switzerland	2.52	3.68	1.16	1.46	2.2	3.2	1	1.45
Japan	4.82	4.46	−.36	.93	3.7	4.4	.7	1.19
Sweden	7.5	6.76	−.74	.9	5.2	5.9	.7	1.13
United States	4.05	4.33	.28	1.07	3	3.4	.4	1.13
Austria	3.69	3.85	.16	1.04	3.4	3.6	.2	1.06
Australia	7.13	6.64	−.49	.93	5.5	5.3	−.2	.96
Canada	7.78	7.25	−.53	.93	6.5	6.3	−.2	.97
New Zealand	6.94	6.58	−.36	.95	5.5	5.3	−.2	.96
Norway	3.36	3.05	−.31	.91	2.6	2.2	−.4	.85
Ireland	5.9	5.5	−.4	.93	5.7	4.8	−.9	.84
United Kingdom	6.75	5.07	−1.68	.75	5.4	4.3	−1.1	.8
New OECD countries:								
Hungary	7.52	6.26	−1.26	.83	6.7	5.6	−1.1	.84
Turkey	7.49	7.5	.01	1	5.9	5.5	−.4	.93
Mexico	1.78	2.58	.8	1.45	1.6	2.1	.5	1.31
Czech Republic	7.27	10.5	3.23	1.44	5.9	9.5	3.6	1.61

SOURCE.—OECD Labour Market Statistics (*OECD Statistical Compendium* [Paris: OECD, 1999]).

table 1 are all computed using the standardized International Labour Organisation (ILO) definition and so are meant to be comparable across countries.[1] One can identify several distinct groups of countries in table 1. First, the highest gender gaps in unemployment rates are to be found in the Mediterranean countries (Spain, Greece, Italy, and France). Next come the Benelux countries (Belgium, Netherlands, and Luxembourg), then the Germanic countries (Germany, Austria, and Switzerland), then the Nordic countries (Sweden, Finland, and Norway), and, finally, the Anglo-Saxon countries (United States, United Kingdom, Ireland, Australia, Canada, and New Zealand). In a number of the Mediterranean countries the unemployment problem is largely a problem of female unemployment.[2] For future use we will refer to the countries in which the female unemployment rate is much higher than the male as the "high-gap" countries and those in which the female-male gap in unemployment rates is small or even negative as the "low-gap" countries. Figure 1 shows that the cross-country variation in the gender gap in unemployment rates has changed over time. Most of the countries that now have large gaps used to have small or nonexistent gaps and the gap only emerged in the 1960s and 1970s, whereas some countries, such as the United States, used to have a gender gap but now do not (although it was always much smaller than seen in some countries today).

The aim of this article is to understand the cross-country variation in the gender gap in the unemployment rate. One should emphasize that the question we are interested in answering is not, Why are women less likely to be in employment than men? (either measured as the employment-population ratio or the labor force participation rate), for which there are fairly obvious answers in terms of the allocation of domestic responsibilities and a large literature on the subject, but the question, Why, once they have decided they want a job, are women in some countries much less likely to be in employment than men? Of course, it may not be so very easy to separate participation from unemployment decisions in practice as there are likely to be feedbacks between the two; for example, the expectation of higher future unemployment is likely to deter human capital accumulation and discourage labor supply in the same way as other anticipated interruptions to market work (see Weiss and Gronau 1981). We do discuss where we think the most important linkages might be but, to keep the article to a manageable size, we do draw some essentially arbitrary lines around the issues we discuss and those we do not.

[1] To be unemployed according to the ILO definition, one must not be currently in employment, have looked for work in the last 4 weeks, and be available to start work within 2 weeks.

[2] Typically these countries also have very high youth unemployment rates although we do not consider this issue here.

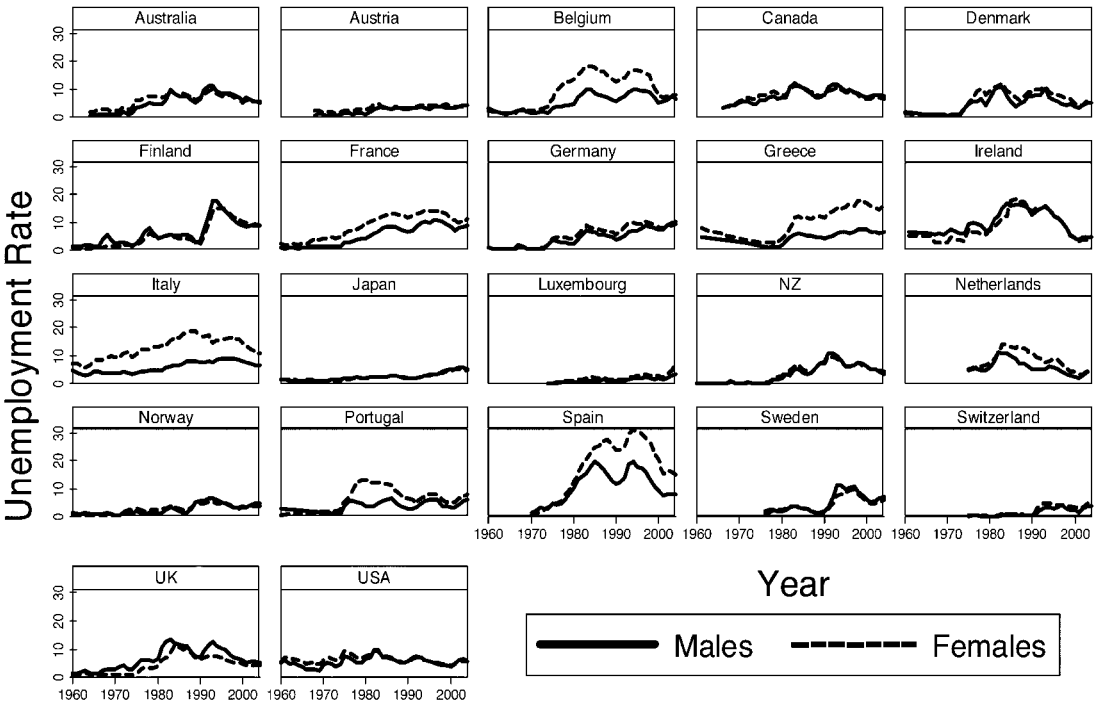

FIG. 1.—Unemployment rates by gender over time

The structure of the article is as follows. In the next section we discuss human capital, institutions, and discrimination as the likely determinants of the gender gap in unemployment rates to act as a framework for the empirical evidence that follows. Section III investigates the variation in the gender gap in unemployment rates across countries and for different population groups. Section IV looks at gender differences in labor market dynamics, the flows into and out of employment, unemployment, and inactivity. We find that in the high-gap countries there are large gender differentials in both the flow out of employment into unemployment and the flow out of unemployment into employment. The rest of the article then explores these gender differences in flows in more detail. Section V investigates in more detail flows from employment into unemployment. The sixth and seventh sections investigate the flow from unemployment to employment from the supply side and the demand side, respectively.

Our overall conclusion is that human capital theory and institutions can explain a large part (though probably not all) of the gender gap in unemployment rates. In addition, there is some evidence that attitudes toward male and female unemployment may be important in explaining the gap in countries where unemployment is high.

II. Explanations of the Gender Gap in Unemployment Rates

In this section we review a number of possible theories for why there might be a gender gap in unemployment rates. There is not much written on this aspect of the differences between men and women, but a good starting point is the very large literature on the gender pay gap.

Part of the pay gap between men and women is undoubtedly the result of differences in labor market attachment that lead to differences in human capital accumulation. There remains some debate about how much of the gender pay gap can be explained by differences in human capital, but there is no longer any debate (as there once was) that this hypothesis has considerable explanatory power (see Altonji and Blank 1999; or Polachek 2004). It is also true that differences in unemployment rates across demographic groups other than gender are related to differences in human capital, for example, more education is associated with lower unemployment (see, e.g., Ashenfelter and Ham 1979). The most plausible reason for this relationship between unemployment rates and human capital is that the gap between marginal product when in work and the reservation wage is smaller for those with low levels of human capital. There are other reasons why differences in labor market attachment may result in differences in unemployment rates: for example, Johnson (1983) suggests that the female unemployment rate is likely to be higher than the male because women wanting to move from home production into market

work are likely to go through a period of intervening unemployment while men who want to change jobs are likely to remain in employment.

Hence, human capital theory predicts higher unemployment rates for women than for men and, among women, higher unemployment rates for women who are likely to have accumulated less human capital, such as married women and those with children. And, across countries, those with lower levels of female labor market attachment would be expected to have higher unemployment rates.[3] And over time we would expect to see rising female labor market participation associated with changes in the gender gap in unemployment rates.[4]

The relationship between gender differences in human capital and gender differences in unemployment rates is also likely to be influenced by labor market institutions. First, institutions that compress the distribution of wages, such as minimum wage laws and trade unions, may reduce the incentives to employ workers with lower levels of human capital, leading to higher unemployment rates for these groups. Blau and Kahn (2003) find that these institutions have an important impact on the gender pay gap, so we should not be too surprised if they also have an important impact on the gender gap in unemployment rates (Bertola, Blau, and Kahn [2002] find evidence that high gender gaps in unemployment rates and high youth unemployment rates are associated with wider union coverage).

Second, institutions that reduce the turnover of labor (such as firing costs) or those that make it difficult for groups of workers who are less firmly attached to the labor force to stay in employment (such as the widespread use of temporary contracts) are also likely to increase the gap in unemployment rates between workers with high and low levels of labor market attachment. For example, firing costs seem to reduce the involuntary part of the flow out of employment especially for workers with long job tenures but also seem to be associated with reductions in the hiring rate. If women have a higher outflow rate from employment than men this reduction in hiring will tend to magnify the gender gap in the unemployment rate.

Finally, part of the gender pay gap may be the result of discrimination against women. In the presence of equal pay legislation (which all the

[3] There is one factor that works in the opposite direction. In countries with a low level of female labor market participation, it tends to be the higher-skilled women who are in the labor force. This selection effect will tend to reduce the measured gender gap in unemployment rates if unemployment rates are negatively related to skill.

[4] Although this relationship may not be monotonic if increasing female labor market participation initially takes the form of the entry of women into the labor market with low levels of accumulated experience; see Polachek (2004) for this argument applied to the gender pay gap.

OECD countries now have) the only way for employers to exercise any prejudice may be through differential hiring rates, something that may be easier when labor markets are slack. Algan and Cahuc (2004) suggest that a "male breadwinner" mind-set, associated with the Catholic religion, can explain part of the cross-country variation in gender differences in employment-population ratios. In what follows we will use this discussion as a framework for interpreting the results that we find and the hypotheses we investigate.

III. Variations in the Gender Gap in Unemployment Rates

For the European countries, the main data used in this article come from the first six waves of the European Community Household Panel Survey (ECHPS) that cover the period 1994–99;[5] for the United States, we use data from the Current Population Survey (CPS) from 1996 to 2000 (to have an approximately comparable period). Description of the data can be found in more detail in Azmat, Güell, and Manning (2004).

We first check that the pattern of gender gaps in unemployment rates in the ECHPS mirrors that presented in table 1. We first estimate a probit model for the probability of being unemployed (conditional on being in the labor force so that we are looking at unemployment rates) including a dummy variable for being female as the only explanatory variable, that is, the estimated model is of the form

$$\Pr(U = 1) = \Phi(\beta_0 + \beta_1 \text{female}). \tag{1}$$

The first column of table 2 reports the marginal effect of being female where countries are ordered by the gender gap in unemployment rates among prime-age workers as reported in table 1 (we also follow this practice in all subsequent tables). These marginal effects should be comparable to the gender gaps in aggregate unemployment rates presented in table 1. They are similar though not identical because the data come from different sources and refer to different periods.

The gender gaps in unemployment rates observed in table 1 and the first column of table 2 could be explained by gender gaps in characteristics that vary across countries. To investigate this hypothesis we simply modify (1) to

$$\Pr(U = 1) = \Phi(\beta_0 + \beta_1 \text{female} + \beta_2 x), \tag{2}$$

where x is a variety of characteristics—age, education, marital status, and

[5] For details of the ECHPS, see Peracchi (2002) and Nicoletti and Peracchi (2002), who discuss, among other things, sample attrition. Because there may be concerns about the representativeness of the ECHPS we have checked the results for the United Kingdom and Spain using their respective labor force surveys; these results are very similar and are available on request from the authors.

Table 2
The Marginal Effects of Characteristics on Gender Gaps in Unemployment Rates

Country	A Female	B Female	C Female	$F \times$ Age (15–24)	$F \times$ Age (35–44)	$F \times$ Age (45–54)	$F \times$ Low Edu	$F \times$ High Edu	$F \times$ Married	$F \times$ Div/Sep	$F \times$ Kids (0–12)	$F \times$ Kids (13–15)
Spain	.087	.086	.052	.078	−.06	−.017	−.004	−.012	.075	−.075	.035	−.013
	(.001)**	(.001)**	(.003)**	(.004)**	(.003)**	(.003)**	(.003)	(.003)**	(.003)**	(.004)**	(.003)**	(.004)**
Greece	.112	.102	.067	.054	−.03	.004	.002	.002	.03	−.011	.026	.038
	(.001)**	(.001)**	(.003)**	(.004)**	(.002)**	(.003)	(.003)	(.002)	(.003)**	(.005)*	(.003)**	(.004)**
Italy	.062	.056	.045	.028	−.06	.002	.025	−.011	.036	.006	.007	−.011
	(.001)**	(.001)**	(.002)**	(.003)**	(.002)**	(.002)	(.004)**	(.002)**	(.002)**	(.005)	(.002)**	(.003)**
France	.053	.053	.042	.004	−.03	−.019	−.023	−.001	.039	−.005	.043	.026
	(.001)**	(.001)**	(.002)**	(.003)	(.002)**	(.002)**	(.002)**	(.002)	(.002)**	(.003)	(.002)**	(.004)**
Belgium	.084	.079	.058	.017	−.03	−.001	−.066	.003	.058	.086	.043	−.024
	(.001)**	(.001)**	(.003)**	(.005)**	(.002)**	(.003)	(.002)**	(.003)	(.004)**	(.006)**	(.004)**	(.004)**
Netherlands	.036	.033	−.004	.016	.001	.009	−.006	−.001	.045	.029	.028	.028
	(.002)**	(.002)**	(.005)	(.009)	(.006)	(.006)	(.006)	(.004)	(.009)**	(.013)*	(.008)**	(.010)**
Luxembourg	.007	0	−.015	.013	.02	.002	.014	−.004	.044	.014	.002	−.009
	(.001)**	(.001)	(.001)**	(.002)**	(.003)**	(.002)	(.003)**	(.001)**	(.003)**	(.003)**	(.002)	(.002)**
Germany	.035	.028	−.009	.01	.02	.015	−.024	−.026	.05	.003	.048	.019
	(.001)**	(.001)**	(.002)**	(.003)**	(.002)**	(.002)**	(.002)**	(.001)**	(.002)**	(.003)	(.002)**	(.003)**
Denmark	.046	.045	.043	−.023	−.02	−.023	−.022	.032	.011	−.011	.059	.046
	(.001)**	(.001)**	(.002)**	(.003)**	(.003)**	(.002)**	(.002)**	(.003)**	(.003)**	(.003)**	(.004)**	(.007)**

Portugal	.049	.053	−.008	.054	−.01	−.008	0	.022	.043	−.013	.041	.01
	(.001)**	(.001)**	(.003)**	(.003)**	(.002)*	(.002)**	(.005)	(.002)**	(.002)**	(.003)**	(.002)**	(.003)**
Finland	.019	.032	.007	−.009	−.01	−.003	.002	−.007	.044	.024	.021	−.003
	(.001)**	(.001)**	(.003)*	(.004)*	(.003)**	(.003)	(.003)	(.003)*	(.004)**	(.005)**	(.003)**	(.004)
United States	.002	.002	−.002	.004	−.01	.001	.007	−.001	.012		0	
	(.000)**	(.000)**	(.001)**	(.001)**	(.001)**	(.001)	(.001)**	(.001)*	(.001)**		(.001)	
Austria	.01	.005	−.006	.016	.01	.011	−.002	.005	−.008	.023	.024	.031
	(.001)**	(.001)**	(.002)**	(.003)**	(.003)**	(.003)**	(.004)	(.002)*	(.002)**	(.004)**	(.002)**	(.005)**
Ireland	−.049	−.035	−.006	.038	−.04	−.027	.021	.005	−.042	−.06	−.027	−.019
	(.001)**	(.001)**	(.003)*	(.004)**	(.003)**	(.003)**	(.004)**	(.003)*	(.002)**	(.002)**	(.002)**	(.003)**
United Kingdom	−.037	−.036	−.044	.016	0	.012	.018	0	−.004	.004	−.003	−.002
	(.001)**	(.001)**	(.002)**	(.002)**	(.002)	(.002)**	(.002)**	(.002)	(.002)*	(.002)	(.001)*	(.002)

SOURCES.—Data for European countries come from ECHPS, data for the United States from CPS.

NOTE.—The sample is restricted to those ages 15–54 inclusive. Dependent variable is whether individual is unemployed conditional on being in the labor force. The reported coefficients are the marginal effects. Coefficient in column marked *A* is that on female dummy in probit model of (1). Coefficient in column marked *B* is that on female dummy in probit model of (2) where the controls are age, education (high being college graduates, ISCED 5–7, and low being less than second stage of secondary education, ISCED 0–2), marital status, and number of children ages 0–12 and 13–15. Coefficient in column marked *C* and subsequent columns is that on female dummy and female dummy interacted with characteristics in probit model of (3). Standard errors are in parentheses.

* Denotes 5% significance level.

** Denotes 1% significance level.

the presence of children in the household. The results are reported in the second column of table 2. Although there is a very slight tendency for the gender gap in unemployment rates to fall in the Mediterranean countries, little of the gender gap can be explained using these characteristics, and substantial gender gaps in unemployment rates remain in the countries where they exist in the aggregate data.[6]

The model estimated so far assumes that all the gender gap in unemployment rates is constant across all segments of the labor force. But, it may be the case that the gender gap varies with characteristics. So, we then estimate a model in which all the characteristics are interacted with a female dummy, that is, a model of the form

$$\Pr(U = 1) = \Phi(\beta_0 + \beta_1 \text{female} + \beta_2 x + \beta_3 \text{female} * x). \quad (3)$$

The marginal effects of these interactions are reported in the third through twelfth column of table 2. Because the probit model is nonlinear one cannot exactly read off the gender gaps in unemployment rates for different sorts of workers from this part of table 2 but, to a first approximation, one can work out the gap in unemployment rates between men and women with a given set of characteristics, x, by adding the coefficients that apply to them. So, to work out the gender gap for married people with young children one would add the marginal effects for having young children and being female, the marginal effect for being married and female and the marginal effect for being female. There is obviously a lot of information, but certain broad patterns emerge.

First, the gender gap in unemployment rates is larger for those who are married and those who have young dependent children. This is consistent with human capital theory as these groups are likely to have larger gender differences in human capital. These results also mirror the finding in earnings functions that gender pay gaps are typically larger for the married and those with young children. However, the variation in the gender gap in unemployment rates over the life cycle does not seem to mirror so obviously the gender gap in pay—in the high-gap countries the gender gap in unemployment rates seems highest among the young while the other countries seem to show little consistent pattern of variation. It should also be noted that in most of the high-gap countries there remains a gender gap in unemployment rates for single childless individuals although there are some countries where the gender gap in unemployment rates for these groups is very small. A natural next question is whether

[6] We do not make any attempt to correct for the selection of women into the labor force. In countries where female labor force participation is low (like many of the Mediterranean countries), the higher-skilled women are more likely to be in the labor force so that the gender gaps in unemployment rates are probably understated when we do not correct for selection on unobservables.

the gender gap in unemployment rates that we observe in some countries is the result of gender differences in flows into unemployment or flows out of unemployment: this is the subject of the next section.

IV. Gender Gaps in Labor Market Dynamics

Most labor economists are familiar with the following formula for the steady-state unemployment rate:

$$u = \frac{h_{eu}}{h_{eu} + h_{ue}}, \tag{4}$$

where h_{eu} is the rate at which workers leave employment for unemployment and h_{ue} is the rate at which they leave unemployment for employment. But, the formula in (4) assumes that there are only two labor market states—employment and unemployment. Given the importance of inactivity for women (and increasingly for men in many countries) using this formula to understand gender differences in unemployment rates might be thought to be limiting. If one introduces the extra state of inactivity, then one can show that the steady-state unemployment rate (note—not the unemployment-population ratio) can be written as

$$u = (1 - \alpha)\frac{h_{eu}}{h_{eu} + h_{ue}} + \alpha\frac{(h_{ei}/h_{ui})}{(h_{ei}/h_{ui}) + (h_{ie}/h_{iu})}, \tag{5}$$

where

$$\alpha = \frac{h_{ie}h_{ui} + h_{iu}h_{ei}}{h_{ie}(h_{ui} + h_{eu} + h_{ue}) + h_{iu}(h_{ei} + h_{eu} + h_{ue})}. \tag{6}$$

The interpretation of (5) is the following. It says that the overall unemployment rate can be thought of as a weighted average of two "component" unemployment rates. The first term on the right-hand side of (5) is the unemployment rate if there are never any flows into or out of inactivity (it is simply the formula in [4]). The second term on the right-hand side of (5) is what the unemployment rate would be if there were never any direct flows between employment and unemployment, only indirect flows via inactivity.[7] The weight α is then a measure of the relative importance of flows via inactivity in generating unemployment, although it is hard to give an intuition for its exact functional form.

If there are gender differences in unemployment rates, this must be because of gender differences in some (or all) of the hazard rates in (5).

[7] Note that, for this unemployment rate, it is the relative size of flows from employment/unemployment to inactivity and vice versa that is important. So, if workers flow at a faster rate from employment to inactivity than from unemployment to inactivity, this will tend to raise the unemployment rate.

Which differences are most important is likely to be helpful in understanding gender differences in unemployment rates. Table 3 presents estimates of the hazard rates and computation of the different components in (5) for men and table 4 the corresponding information for women. The data we use for this come from the retrospective monthly employment history that all individuals in the ECHPS are asked to complete and from consecutive monthly CPS files matching those individuals who are in the sample in consecutive months.[8] Our method for estimating the labor market transition rates is the following. We have observations on the labor market state an individual is in one month (denote this by S_0 that can take the values e, u, i) and then again a month later (denote this by S_t). As the interval between the two observations is a month, it is a reasonable approximation to assume that individuals cannot make two transitions in that period. Then the simplest way to estimate a hazard rate (h_{eu} say) is to note that

$$\Pr(S_t = e | S_0 = e, S_t \neq i) = e^{-h_{eu}t}. \tag{7}$$

The left-hand side of (7) is readily computed using our data, and we take the negative of the log to compute the hazard rate.[9] The hazard rates in table 3 are multiplied by 100 so that they can be interpreted as the percentage of individuals in one labor market state moving to another in the course of a month.

As well as the hazard rates, tables 3 and 4 also report the three components of the steady-state unemployment rate as presented in (5)—the steady-state unemployment rate one would calculate ignoring inactivity (the eighth column), that one would calculate ignoring direct flows between employment and unemployment (the ninth column), and the "share" of the two components using the formula in (5) and (6) (the tenth column). The penultimate column presents the steady-state unemployment rate computed using the hazard rates and the final column the actual unemployment rate in the data as a check on the internal consistency.

[8] One noticeable feature of these data is that flows between different labor market states are much higher in the United States than in the European countries. While this is probably true, the differences are probably overstated in our data as the European data come from retrospective information that probably tends to "forget" transitions, and the U.S. data are known to have misclassification problems (see Abowd and Zellner 1985; or Abraham and Shimer 2002) that tend to overstate transitions. However, the main interest here is not the comparison of the levels of transition rates across countries but the gender differences in transition rates across countries. As these are likely to be less affected by measurement issues, we do not attempt to correct the data in any way.

[9] When the interval between observations is small, the estimated hazard rate will be very similar to a simple-minded estimate of the probability of moving states. For example h_{eu} as defined in (7) is the probability of moving from employment to unemployment given that there is not a move to inactivity.

Table 3
Flows between Labor Market States and Implied Steady-State Unemployment Rates: Men

Country	$E \to U$ (1)	$E \to I$ (2)	$U \to E$ (3)	$U \to I$ (4)	$I \to U$ (5)	$I \to E$ (6)	U-Rate (No Inactivity) (7)	U-Rate (Only Inactivity) (8)	α (9)	Implied Steady-State U-Rate (10)	Actual U-Rate (11)
Spain	1.5	.37	7.43	.85	.72	1.16	16.8	21.3	.07	17.1	17.8
Greece	.63	.21	9.4	.61	.44	.99	6.3	13.4	.05	6.6	9.4
Italy	.52	.32	3.93	.71	.64	.73	11.7	28.6	.11	13.5	12.6
France	.61	.29	8.43	1.85	.86	1.33	6.7	9.2	.12	7	10.1
Belgium	.35	.23	5.19	.68	.46	.99	6.3	13.7	.09	6.9	6
Luxembourg	.21	.29	10.69	.72	.3	1.82	2	6.1	.06	2.2	2.6
Germany	.57	.29	7.42	1.44	.42	1.72	7.1	4.7	.13	6.8	6.1
Denmark	.69	.38	10.65	1.72	.81	2.07	6.1	7.9	.11	6.3	8.7
Portugal	.43	.23	7.44	.84	.35	1.14	5.5	7.9	.08	5.7	5.2
Finland	.92	1.01	9.06	2.63	.97	3.44	9.3	9.8	.19	9.3	11.2
United States	1.26	1.37	51.35	29.22	6.11	10.7	2.4	2.6	.27	2.5	3.4
Austria	.61	.37	14.12	1.35	.31	1.52	4.1	5.2	.07	4.2	3.1
Ireland	.57	.38	4.57	.54	.76	2.54	11.2	17.5	.09	11.7	12.5
United Kingdom	.61	.25	7.7	1.49	.96	1.7	7.4	8.8	.11	7.5	6.7

SOURCES.—Data for European countries are from retrospective monthly work history data in ECHPS. Retrospective monthly data from Sweden and Netherlands are missing. U.S. data are from successive monthly CPS.

NOTE.—Sample restricted to those aged between 25 and 54. Hazard rates are estimated using the methodology described in (7) and refer to monthly percentage transition rates. U-rate (no inactivity) is the formula of (4). U-rate (only inactivity) is the second part of the formula of (5). α is as defined in (6).

Table 4
Flows between Labor Market States and Implied Steady-State Unemployment Rates: Women

Country	$E \to U$ (1)	$E \to I$ (2)	$U \to E$ (3)	$U \to I$ (4)	$I \to U$ (5)	$I \to E$ (6)	U-Rate (No Inactivity) (7)	U-Rate (Only Inactivity) (8)	α (9)	Implied Steady-State U-Rate (10)	Actual U-Rate (11)
Spain	1.9	.89	5.62	1.49	.37	.55	25.3	28.7	.14	25.8	31.9
Greece	1.05	.79	5.75	1.1	.25	.55	15.5	24.9	.13	16.7	23
Italy	.74	.7	3.62	1.11	.3	.45	17	29.5	.18	19.2	24.2
France	.76	.44	6.29	1.99	.49	.79	10.7	12.1	.17	11	16.2
Belgium	.56	.65	3.19	.96	.33	.92	14.8	19.3	.19	15.7	9.7
Luxembourg	.23	.66	8.61	2.13	.09	.83	2.6	3.3	.18	2.7	5.9
Germany	.61	.45	5.03	1.46	.23	.97	10.8	6.8	.18	10	9.6
Denmark	.93	.65	7.11	2.54	.83	1.97	11.6	9.7	.2	11.2	9.3
Portugal	.62	.43	5.85	1	.21	.66	9.6	12.1	.12	9.8	10.5
Finland	1.14	1.59	8.74	3.45	.91	3.22	11.5	11.6	.24	11.5	12
United States	1.09	2.69	51.09	46.41	3.59	7.25	2.1	2.8	.38	2.4	3
Austria	.59	.65	9.23	2.11	.18	.77	6	6.6	.16	6.1	5.4
Ireland	.62	1.24	8.63	2.32	.18	1.15	6.7	7.6	.19	6.9	12.4
United Kingdom	.39	.85	10.27	4.06	.39	1.64	3.6	4.7	.24	3.9	4

SOURCES.—Data for European countries are from retrospective monthly work history data in ECHPS. Retrospective monthly data from Sweden and Netherlands are missing. U.S. data are from successive monthly CPS.

NOTE.—Sample restricted to those aged between 25 and 54. Hazard rates are estimated using the methodology described in (7) and refer to monthly percentage transition rates. U-rate (no inactivity) is the formula of (4). U-rate (only inactivity) is the second part of the formula of (5). α is as defined in (6).

The last two columns are similar, differences arising from the fact that the labor markets are not in a steady state.[10]

Looking at the results for men in table 3, one can see that the α is small, implying that flows into and out of inactivity are relatively unimportant in explaining the male unemployment rate. Also, the two component unemployment rates are very similar. This implies that the difference in the steady-state unemployment rates computed using the formulae in (4) and (5) are small so that, to a first approximation, one can ignore inactivity. Given the high labor force participation rates for men, this is probably not that surprising.

What might be found more surprising are the results for women in table 4. It is true that α is larger for women than for men, implying a more important role for inactivity, but, in many countries, it is still very low. This is quite consistent with a low female participation rate if inactivity is a very stable state. And, again the two component unemployment rates tend to be quite similar, with the conclusion that the use of (4) rather than (5) will not lead to seriously misleading conclusions.

Given the results in tables 3 and 4, we will, in the interests of keeping the article to a manageable length, concentrate on gender gaps in flows between employment and unemployment and ignore gender differences in flows involving inactivity. One must be careful here: the results in tables 3 and 4 do not suggest that gender gaps in flows involving inactivity are nonexistent, it is simply that they (for some reason) mirror gender gaps in flows that do not involve inactivity. This needs to be borne in mind.

The results in tables 3 and 4 can also shed light on whether the hypothesis of Johnson (1983) can explain the cross-country variation in the gender gap in unemployment rates. Johnson argued that there is a gender gap in unemployment rates because women wanting to move from inactivity to employment often go through a period of intervening unemployment. However, the result that turning off the flows involving inactivity results in very similar cross-country variation in unemployment rates suggests that this cannot be the whole story. There are sizable gender gaps in direct flows between employment and unemployment in the high-gap countries, and it is not clear that Johnson's arguments can explain this.

We now estimate the gender differences in hazard rates controlling for

[10] It is worth noting that the gap between the computed steady-state and actual unemployment rates is noticeably larger for women than for men, especially in the high-gap countries. This is what one would expect when labor market participation of women is increasing markedly, as is the case in many of these countries.

Table 5
Gender Gaps in Labor Market Transition Rates: With Controls

Country	$E \to U$	$U \to E$	$U \to I$	$E \to I$	$I \to U$	$I \to E$
Spain	.275	−.354	.575	.884	−.366	−.574
	(.045)**	(.038)**	(.066)**	(.060)**	(.067)**	(.061)**
Greece	.538	−.47	.551	1.312	−.002	−.608
	(.067)**	(.058)**	(.133)**	(.067)**	(.103)	(.081)**
Italy	.394	−.138	.359	.849	−.263	−.641
	(.064)**	(.057)*	(.081)**	(.056)**	(.066)**	(.080)**
France	.266	−.341	−.008	.422	−.497	−.525
	(.061)**	(.059)**	(.088)	(.065)**	(.111)**	(.085)**
Belgium	.466	−.49	.424	1.059	−.245	−.343
	(.100)**	(.115)**	(.187)*	(.095)**	(.158)	(.123)**
Luxembourg	−.189	−.195	.94	.93	−.698	−.641
	(.128)	(.111)	(.287)**	(.086)**	(.266)**	(.114)**
Germany	.012	−.425	.05	.395	−.519	−.34
	(.043)	(.046)**	(.075)	(.053)**	(.110)**	(.059)**
Denmark	.371	−.432	.387	.609	−.064	.026
	(.071)**	(.068)**	(.116)**	(.080)**	(.114)	(.075)
Portugal	.446	−.3	.16	.69	−.257	−.56
	(.073)**	(.068)**	(.122)	(.069)**	(.111)*	(.069)**
Finland	.344	−.068	.28	.629	−.341	−.179
	(.066)**	(.060)	(.088)**	(.061)**	(.093)**	(.048)**
United States	−.114	−.012	.474	.474	−.463	−.436
	(.013)**	(.012)	(.014)**	(.014)**	(.015)**	(.011)**
Austria	−.05	−.511	.578	.527	−.408	−.509
	(.093)	(.102)**	(.168)**	(7.12)**	(.176)*	(.079)**
Ireland	.062	.401	1.058	1.174	−.687	−.22
	(.080)	(.079)**	(.164)**	(.077)**	(.129)**	(.057)**
United Kingdom	−.473	.292	1.019	1.206	−.76	−.111
	(.054)**	(.053)**	(.078)**	(.051)**	(.084)**	(.050)*

SOURCES.—Data for European countries are from retrospective monthly work history data in ECHPS. Retrospective monthly data from Sweden and Netherlands are missing. U.S. data are from successive monthly CPS.

NOTE.—Sample restricted to those aged between 25 and 54. Hazard rates are estimated using the methodology described in (7) and refer to monthly percentage transition rates. U-rate (no inactivity) is the formula of (4). U-rate (only inactivity) is the second part of the formula of (5). α is as defined in (6). Controls are age, education, marital status, and number of children.

* Denotes 5% significance level.

** Denotes 1% significance level.

other relevant variables. As the hazard rates must be nonnegative, a convenient empirical model is

$$h_{eu} = e^{\beta_{eu}x}, \tag{8}$$

where x is a vector of characteristics (that will include female dummies). Substituting (8) into (7) suggests that a simple way to estimate β_{eu} is to restrict the sample to those who are initially in employment and not subsequently in inactivity and then use a complementary log-log model to estimate the probability that the individual is in employment. Table 5

reports the coefficients on a female dummy when controls for personal characteristics are included.[11]

Note that the coefficient estimates will be the extent to which the hazard rate for a particular labor market transition is proportionately different for women. So, when we see in the column headed h_{eu} that the coefficient on the female dummy for Germany is 0.067, this means that women are 6.7% more likely to leave employment for unemployment than men.[12]

There is a lot of information in table 5, but the most important points are the following. If we consider direct flows between employment and unemployment, the high-gap countries seem to have larger gender gaps in both the flows from employment to unemployment and the flows from unemployment to employment than low-gap countries (read down a column to see this). Both of these gender gaps need to be understood to get a good understanding of the source of the gender gap in unemployment rates.

If we consider flows involving inactivity, women in all countries tend to have higher flows into inactivity both from employment and unemployment. But, as the discussion of (5) above made clear, it is the proportional difference in the hazard rates from employment and unemployment to inactivity that is important for the unemployment rate, so that one should look at the difference between the female dummy on the EI transition and the UI transition in table 5. In the high-gap countries there is some indication that the gender gap in the flow from employment to inactivity is larger than the gender gap in the flow from unemployment to inactivity: this will tend to increase the unemployment rate. There is a less systematic pattern in the gender gap in flows from inactivity to employment or unemployment. Given the evidence in table 5, we focus first on the flows from employment to unemployment and then on the flows from unemployment to employment.

[11] Because we want a common specification for all the hazard rates, the controls do not include any variables that are state-specific, e.g., characteristics of a job if one is in employment. But tables 6 and 11 do provide information on the importance of these characteristics. The discussion paper version (Azmat et al. 2004) also includes estimates without controls—these are very similar.

[12] One might wonder whether proportionate or absolute differences in hazard rates are the more important: we think proportionate differences for the following reason. To keep things simple, consider the formula for the steady-state unemployment rate in (4). Then simple differentiation shows that

$$\frac{\partial u}{\partial \ln(h_{eu})} = u(1-u) = -\frac{\partial u}{\partial \ln(h_{ue})},$$

so that a proportionate change in h_{eu} will have the same impact on unemployment (though with the opposite sign) as an equal proportionate change in h_{ue}. This means that we can, more or less, compare the coefficients on the female dummy for different transition rates.

V. Gender Differences in Flows from Employment to Unemployment

As table 5 has shown, women in the high-gap countries leave employment for unemployment at a higher rate than do men. The flow from employment to unemployment is investigated further in table 6. These regressions are similar to the one estimated in table 5 except that, in some specifications, we include some characteristics of the job as extra controls. Also, because the information on the characteristics of the job held are only available for jobs held at the annual interview, these equations are estimated on annual data.

The first column of table 6 reports estimates of models for the transition from employment to unemployment that include only a female dummy. The qualitative patterns of these coefficients that are based on annual data are the same as those in table 5 (that were based on monthly data) with women having higher rates of transition from employment to unemployment than men in the high-gap countries. The second column then introduces personal characteristics as extra controls: this has only marginal effects on the coefficient on the female dummy. The next four columns then report results when we interact the female dummy with marital status and the number of children to see whether there is significant variation in the gender gap in the flow from employment to unemployment. The signs of these interaction terms do suggest that married women and women with children have higher rates of leaving employment for unemployment (as would be predicted by the human capital model), but most of the coefficients are insignificantly different from zero and these coefficients are not noticeably higher in the high-gap countries.[13]

This suggests that domestic responsibilities do not play a big role in transitions from employment to unemployment. This is not to say that domestic responsibilities do not play an important role in women's flows out of employment, just that women with children are more likely to leave employment for inactivity than unemployment. This conclusion is consistent with information on the reasons given for why jobs end that is tabulated in table 7 both for those who are currently unemployed and those who are currently inactive. With the exception of a couple of countries, reasons connected with "caring" account for a very small fraction of jobs ending where the individual is currently unemployed.[14] This is

[13] This result is a little different from that in the literature on education and unemployment where the high unemployment rate of the less-educated is primarily due to a higher incidence and not a longer duration.

[14] In fact, table 7 probably overstates the proportion, as women who had children and left employment for inactivity but are now trying to get a job again will be included in the currently unemployed category.

not surprising: most women leaving employment to have children go directly into inactivity.

In many countries men are more likely than women to be laid-off. In countries such as the United Kingdom this difference is extreme—45% of male jobs end because the worker is laid-off compared to 23% of women. In the high-gap countries, the most striking feature of table 7 is that there is not a large gender difference in the fraction of jobs ending in layoff. A plausible explanation of this is that men in the high-gap countries are much more likely to be in long-term permanent jobs in which the right of employers to fire workers is severely restricted. Women are less likely to be in these jobs because they are more likely to have had interruptions in their work histories.

This hypothesis is explored further in the final column in table 6, where we report the coefficient on the female dummy when job characteristics (industry, occupation, public/private size of firm, full-/part-time, permanent/temporary, job tenure) are also included in a model of the transitions from employment to unemployment. Petrongolo (2004) has documented how female workers are overrepresented in temporary and part-time jobs that are generally at more risk of ending. In some of the high-gap countries, notably France and Spain (which are heavy users of temporary contracts; see Azmat et al. [2004, table A1]), the introduction of these variables does significantly reduce the coefficient on the female dummy, suggesting that the "two-tier" labor market operated in these countries that protects the jobs of some workers at the expense of others works to the disadvantage of women. Now, let us turn to flows in the opposite direction, from unemployment to employment.

VI. Flows from Unemployment to Employment: The Behavior of Workers

The actions of both individuals and employers are likely to affect the flow from unemployment to employment. In this section, we consider the actions of the unemployed themselves; the following section considers the actions of employers.

The unemployment rate is meant to measure the fraction of people who want a job but do not have one. The ILO definition of unemployment uses evidence that people have looked for work in the recent past and are available to start work in the near future to determine whether people without work currently want it. But some economists think that, while there is a meaningful distinction between employment and nonemployment, the distinction between unemployment and inactivity is meaningless. On this view, the fact that fewer women want paid work (largely because of domestic responsibilities) spills over into a higher unemployment rate and does not show up only in a lower labor force participation

Table 6
Gender Differences in Flows from Employment to Unemployment

Country	No Controls, Coefficient on Female Dummy	Controls on Personal Characteristics, Coefficient on Female Dummy	Controls on Personal Characteristics and Interactions				Controls on Personal and Job Characteristics, Coefficient on Female Dummy
			Coefficient on Female Dummy	Coefficient on Female × Married	Coefficient on Female × Kids0–12	Coefficient on Female × Kids13–15	
Spain	.222	.239	.199	.01	.071	.167	.141
	(.052)**	(.054)**	(.080)*	(.116)	(.141)	(.194)	(.060)*
Greece	.531	.549	.516	.01	.061	.364	.554
	(.074)**	(.076)**	(.114)**	(.169)	(.214)	(.285)	(.084)**
Italy	.056	.136	.1	−.134	.254	.205	.018
	(.070)	(.071)	(.098)	(.160)	(.195)	(.277)	(.077)
France	.357	.432	.158	.394	.358	−.393	.279
	(.096)**	(.097)**	(.152)	(.207)	(.232)	(.422)	(.118)*
Belgium	.717	.803	.449	.348	.677	.039	.729
	(.132)**	(.134)**	(.207)*	(.284)	(.391)	(.657)	(.162)**
Netherlands	.597	1.007	.168	.527	.172	.592	1.152
	(.133)**	(.118)**	(.202)	(.305)	(.353)	(.443)	(.150)**
Luxembourg	.334	.28	−.43	1.511	−.069	−.014	.149
	(.296)	(.302)	(.515)	(.688)*	(.796)	(1.491)	(.394)
Germany	.153	.083	−.374	.486	.289	.468	.108
	(.053)**	(.054)	(.090)**	(.115)**	(.135)*	(.213)*	(.065)

Denmark	.612	.636	.238	.206	.586	13.362	.502
	(.118)**	(.120)**	(.173)	(.249)	(.323)	(363.531)	(.140)**
Portugal	.448	.543	.243	−.006	.681	.427	.49
	(.078)**	(.080)**	(.136)	(.169)	(.191)**	(.275)	(.086)**
Finland	.358	.435	.204	.405	.011	−.071	.451
	(.124)**	(.127)**	(.214)	(.271)	(.290)	(.421)	(.153)**
Sweden	.014	.205	.117	.095	−.36	−.02	.367
	(.093)	(.125)	(.169)	(.196)	(.211)	(.280)	(.151)*
Austria	.29	−.011	.271	−.691	.712	.211	−.202
	(.122)*	(.111)	(.197)	(.260)**	(.279)*	(.498)	(.131)
Ireland	−.103	−.223	.12	−.232	−.048	−.521	−.234
	(.108)	(.089)*	(.175)	(.235)	(.271)	(.413)	(.103)*
United Kingdom	−.188	.028	−.211	−.129	.091	.314	.032
	(.089)*	(.094)	(.131)	(.187)	(.245)	(.341)	(.104)

SOURCE.—Data are from ECHPS.

NOTE.—The sample is all those who are employed at one interview and employed or unemployed subsequently. Model estimated is a clog-log model where the dependent variable takes the value one if the individual is still employed. Standard errors are in parentheses. The ILO main activity status is used for Sweden as the self-defined main activity status question, used for the other countries, is not asked. Controls are age, education, marital status, and number of children.

* Denotes 5% significance level.

** Denotes 1% significance level.

Table 7
Reasons for Leaving Previous Job (%)

		Currently Unemployed				Currently Inactive			
Country	Sex	Obliged by Employer	End of Contract	Childbirth/ Child Care	Sick/Disabled/ Retired/Other	Obliged by Employer	End of Contract	Childbirth/ Child Care	Sick/Disabled/ Retired/Other
Spain	M	22	63	0	15	20	20	0	60
	F	17	64	5	14	12	30	16	41
Greece	M	38	37	0	26	10	5	0	85
	F	38	39	5	18	16	13	22	49
Italy	M	39	36	1	23	16	6	0	78
	F	28	46	4	22	13	12	21	53
France	M	41	44	0	15	33	5	1	60
	F	34	44	6	17	17	11	21	51
Belgium	M	55	18	0	27	37	2	0	61
	F	43	22	8	26	21	8	16	55
Netherlands	M	30	15	2	53	8	4	1	86
	F	12	12	42	35	7	8	38	47
Germany	M	59	20	0	21	46	10	0	45
	F	54	22	1	23	27	8	19	47
Denmark	M	42	26	1	31	10	11	0	79
	F	36	29	7	29	12	14	5	70
Portugal	M	24	40	0	37	4	5	0	91
	F	24	44	4	29	6	12	11	71
Finland	M	28	57	0	14	10	31	0	58
	F	22	60	4	14	9	34	9	48
Austria	M	43	10	1	47	12	2	0	86
	F	33	15	18	34	9	3	36	53
Ireland	M	41	33	1	25	18	7	1	73
	F	26	33	3	38	11	10	36	43
United Kingdom	M	45	18	1	37	22	6	4	68
	F	23	16	16	45	12	6	36	46

SOURCE.—Data are from ECHPS.
NOTE.—Question asked only of those who have worked within the last 2 years. Other reasons include marriage, move for partner's job, closure of own business, and study/national service.

Table 8
Are the Unemployed More Likely than the Inactive to Get a Job?

	Female	Female & Unemployed in $t = 0$	Unemployed in $t = 0$
Spain	−.124	.418	1.702
	(.164)	(.069)**	(.047)**
Greece	−.302	.426	1.985
	(.253)	(.105)**	(.074)**
Italy	−1.04	.611	1.452
	(.324)**	(.100)**	(.070)**
France	−.269	.19	1.557
	(.196)	(.100)	(.077)**
Belgium	−.836	−.513	1.396
	(.347)*	(.169)**	(.131)**
Luxembourg	−.203	.317	.793
	(.325)	(.159)*	(.112)**
Germany	−.093	.094	1.392
	(.157)	(.070)	(.051)**
Denmark	−.428	−.434	1.78
	(.219)	(.104)**	(.081)**
Portugal	−.346	.289	1.724
	(.227)	(.097)**	(.070)**
Finland	.059	.137	.911
	(.196)	(.078)	(.059)**
United States	−.035	.266	1.145
	(.026)	(.016)**	(.012)**
Austria	−.45	.171	2.149
	(.303)	(.129)	(.092)**
Ireland	−.341	.491	.972
	(.265)	(.104)**	(.067)**
United Kingdom	−.179	.235	1.579
	(.138)	(.073)**	(.055)**

SOURCES.—Data for European countries are from ECHPS retrospective work history data; data for United States are from successive monthly CPS files.

NOTE.—The sample is all those who are not in employment in an initial month, and the dependent variable is whether they are still not in employment a month later. The other controls included are age, education level, gender, presence and age of children, and the gender dummy interacted with the other controls.

* Denotes 5% significance level.

** Denotes 1% significance level.

rate. If this is true, then, in some sense, the female unemployed in high-gap countries may be less serious about wanting a job and taking steps to get one than the male unemployed. There are a number of ways in which one might test this hypothesis.

Whether unemployment and inactivity are distinct labor market states was a question first posed by Flinn and Heckman (1983) and subsequently also addressed by Jones and Riddell (1999). The basis of their tests is to see whether there is a significant difference between the probability of entering employment between those who are unemployed and those who are inactive.

Table 8 reports results for this exercise for the countries in the ECHPS. The sample is those who are either unemployed or inactive in the initial observation, and the dependent variable is binary according to whether

the individual is subsequently in employment or not. We report the marginal effect of being in employment in a month's time of being unemployed rather than inactive. We also interact a female dummy with this variable to see whether there are significant gender differences. In all countries the unemployed are more likely to get a job than the inactive. The extent of this is similar in high-gap and low-gap countries. Further, the interaction of the initially unemployed variable with the female dummy is not noticeably smaller in the high-gap countries, as one would expect if the female unemployed are less serious about getting work than their male counterparts: indeed the interaction term is largest in some of the high-gap countries. There is no evidence here that, in the high-gap countries, the difference between the unemployed and the inactive is more blurred for women than in the low-gap countries.

Another way to consider the hypothesis that the female unemployed in some countries are less serious about getting work is to look at evidence on job search intensity. Measuring search intensity is problematic, and the only available evidence is on numbers and types of job search methods that the unemployed report using (though it should be noted that those who report using more search methods do typically have lower durations of unemployment). Table 9 presents evidence for the three countries for which we have been able to obtain it—Spain, the United Kingdom, and the United States. There are sizable and well-known differences in the use of different search methods across countries, with, for example, the unemployed in the United States being much less likely to report use of the public employment service and to report the use of personal contacts and the United Kingdom unemployed reporting the use of more search methods than those in the United States and Spain (see Pellizzari [2004] for a cross-country comparison of search methods used to get jobs and the wage premia associated with them).[15] In all countries men report using slightly more search methods than women, but this gap is similar in Spain (a high-gap country) and the United States/United Kingdom (both low-gap countries). The limited evidence presented provides no support for the view that the women in high-gap countries are much less serious in their desire for work, as evidenced by their search effort.

Another variant of this hypothesis is that the level and availability of welfare benefits affect the reservation wage and, hence, the exit rate from unemployment. Table 10 presents some data on the fraction of the unemployed of different genders who report receiving any form of welfare benefit associated with unemployment. In most countries women are less likely to receive welfare benefits than men, primarily because their weaker

[15] One should not make too much of this as the different countries allow respondents a different maximum number of search methods to be listed, and this may influence responses, although very few report the maximum allowed.

Table 9
Methods of Job Search among the Unemployed (%)

	U.S. (CPS) Method Mentioned		UK (LFS) Method Mentioned		Spain (LFS) Method Mentioned	
	Men	Women	Men	Women	Men	Women
Contacted public employment service or other public body	22.2	19.9	83.9	63.0	88.6	86.0
Applied directly to employers	66.2	62.8	57.4	49.1	25.4	20.0
Placed or answered advertisements	16.5	16.4	65.0	60.6	14.2	16.7
Sent out resumes/applications	39.0	44.4	47.1	45.2	5.7	7.1
Looked at advertisements	20.9	21.6	90.9	91.7	14.8	17.4
Contacted friends/relatives/unions	19.8	13.9	70.1	60.4	51.2	48.0
Private employment agency	6.5	6.5	24.1	18.4	3.2	4.0
Other	8.6	9.0	9.3	7.5	5.1	7.1
Average number of search methods	2.00	1.94	4.70	4.08	1.98	1.96
Number of observations	92,001	92,001	117,941	70,152	284,684	328,296

SOURCES.—Data from the CPS are from the period January 1997 to December 1998; data from the United Kingdom and Spanish LFS are for March 1992 to February 2003.

NOTE.—The classification of search methods is different in the three countries, and some reclassification has been done. For Spain, data on the method "looked at advertisements" are available only after 1999. For Spain, until 1998, the maximum number of methods respondents could answer was three. From January 1999 to March 2002, the fraction of unemployed answering "4 or more methods" was 15.9% for males and 15.7% for females.

Table 10
Benefit Receipt among the Unemployed

Country	Male	Female
Spain	34.56	15.86
Greece	13.62	9.41
Italy	4.29	3.28
France	51.01	40.55
Belgium	79.85	73.99
Luxembourg	22.22	17.86
Germany	68.7	69.44
Denmark	85.8	83.72
Portugal	26.92	23.37
Finland	79.66	75.43
Austria	59.45	43.5
Ireland	87.86	44.9
United Kingdom	33.25	17.21

SOURCE.—ECHPS.
NOTE.—The question asked is, "Do you receive unemployment benefit or assistance?"

employment history makes them less likely to have established entitlement to unemployment benefits and because unemployed women may be living with employed men and so not be eligible for means-tested unemployment assistance. Looking at this table, it is very hard to see how it could possibly form the basis of an explanation as to why, in some countries, there is such a large gender gap in unemployment rates. For example, virtually no one, male or female, in Italy receives any benefits, and the proportions of men and women doing so in Spain and the United Kingdom are very similar even though they have very different gender gaps in unemployment rates.

However, while we might expect reservation wages to be influenced by welfare benefits, there are other factors that might be important in determining the minimum level of wages acceptable to the unemployed. The ECHPS directly asks the unemployed about the minimum acceptable wage at which they would work. The female unemployed unsurprisingly report lower reservation wages than the male unemployed,[16] and a more pertinent question is whether the gap between reservation wages and the average level of wages is higher for women than for men. We used the ECHPS to compute gender gaps in both wages and reservation wages corrected for personal characteristics.[17] We then computed a gender gap

[16] This gender difference in reservation wages probably reflects the gender pay gap but may also reflect the fact that they may attach greater importance to nonwage attributes of jobs.

[17] Note that to maintain comparability with our measure of the gender gap in unemployment rates as the female minus the male we measure all gender gaps in this way even though the gender gap in wages is normally measured the other way round.

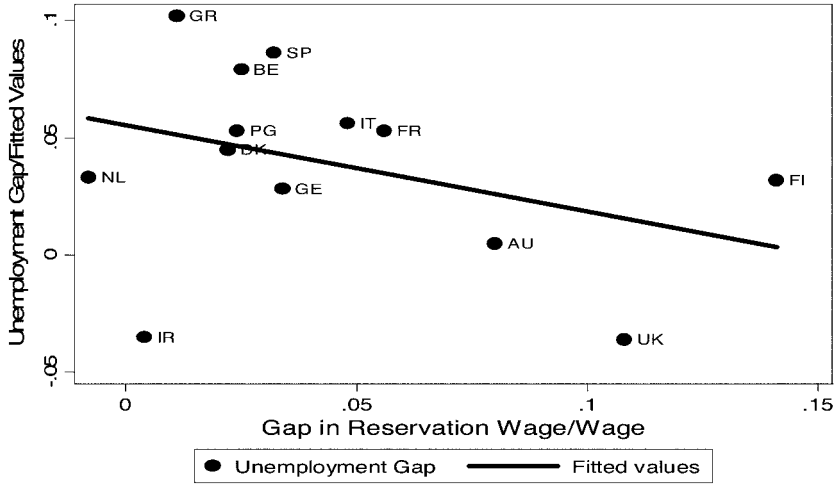

FIG. 2.—The gender gap in unemployment rates and reservation wage/wage ratios

in the log of the reservation wage minus the log of the wage (we will call this, with some abuse of terminology, the gender gap in the replacement ratio) and, in figure 2, plot this against the gender gap in unemployment rates. The gender gap in the replacement ratio is generally positive, indicating a smaller gender gap in reservation wages than in actual wages. But there is no indication that the countries with a large gender gap in replacement ratios have a large gender gap in unemployment rates: indeed the regression line (shown on fig. 2) is negatively sloped albeit with a *t*-statistic of only 1.1.

This section has explored the hypothesis that, for some reason, women in some countries who are classified as unemployed are not as serious about wanting work as the male unemployed or are more selective about the jobs they will take. But we have found little evidence for this hypothesis.

Another possible hypothesis about why women in the high-gap countries take longer to find a job than men is from the demand side. The next section considers this.

VII. Flows from Unemployment to Employment: The Behavior of Employers

There are a number of possible reasons why the demand for women may be lower than for men and why such a difference in demand might get reflected in differential unemployment durations and not just wages. The human capital hypothesis predicts that workers with low levels of human

capital will find it harder to get a job because it is harder to find jobs paying above the reservation wage. If this is the case, we would expect to see larger gender gaps in the flows from unemployment to employment for groups where the gender gap in accumulated human capital is likely to be larger, such as those who are married and those with young dependent children. Table 11 presents estimates from annual data on the transition rates from unemployment to employment. The first four columns estimate interactions of the female dummy with marital status and dependent children. As predicted by the human capital hypothesis, there is a larger gender gap in flows from unemployment to employment for the married and those with dependent children. There is also, however, a sizable estimated gender gap in this transition rate in the high-gap countries among the single and childless.

This evidence on the importance of human capital is rather indirect, so the second part of table 11 investigates whether more direct measures also help to explain the gender gap. The ECHPS contains limited information on work history, but we do include a dummy variable for whether the individual has ever worked before and a measure of how long it is since the individual last worked. These variables are themselves significant in explaining the transition rate, but they make relatively little difference to the coefficients on the other gender variables, as can be seen by comparing the coefficients in the two panels of table 11.[18]

As emphasized in the theoretical section, it may be that it is the interaction of human capital differences with labor market institutions that is important in explaining the high gender gap in unemployment rates in some countries. Blau and Kahn (2003) have suggested that cross-country differences in the gender pay gap can be explained by gender-unspecific labor market institutions such as the minimum wage and collective bargaining. Figure 3 shows that there is a weak positive relationship between the gender pay gap and the gender gap in unemployment rates (the *t*-statistic is 1.2), suggesting that pay compression may lead to divergence in unemployment outcomes.[19] But this evidence is hardly overwhelming, and the decision to employ a man rather than a woman may not be based on a comparison of wages alone.

One source of a difference in the employment costs of men and women comes from maternity leave, some of whose costs are typically borne by employers. But, as table 12 shows, the differences in maternity leave regulations across EU countries are relatively small, and the Nordic countries, which have generous maternity provisions, also have small gender

[18] This is true whether the work history variables are included on their own (as is the case with the estimates presented in table 11) or interacted with gender.

[19] These gender gaps come from a regression in which personal characteristics are also included.

gaps in unemployment rates. Ruhm (1998) found that maternity leave was positively associated with female employment to population ratios (he did not consider unemployment rates).

Another hypothesis is that differing attitudes toward male and female employment may affect the gender gap in unemployment rates (see Algan and Cahuc [2004], for a similar idea that these attitudes are associated with Catholicism). Any such link may come from the supply side, with women in some countries being less concerned about getting jobs, or from the demand side, with employers thinking that women are less deserving of employment than men and making their hiring decisions accordingly. We can get some idea how widespread discriminatory attitudes are from the 1996 Eurobarometer survey that asks respondents whether they agree with the statement "When jobs are scarce, men should have more right to a job than women." In all countries men are more likely than women to think that women are less deserving of employment. But there are also substantial differences across countries with, crudely, the Nordic countries being less discriminatory and the Mediterranean countries more so. There are also differences across regions within countries, for example, southern Italy is more discriminatory than northern Italy. Figure 4 plots the proportion against the gender differential in the unemployment rate at the regional level, marking the observations with a two-letter code for the country to which they refer. There is a clear positive relationship between the two variables that the first column of table 13 shows is significantly different from zero. One might think that all of this is driven by differences across countries but, while the inclusion of country fixed effects reduces the size of the "attitudinal" variable, it remains significantly different from zero.

However, a problem with this hypothesis is that the discriminatory attitudes have been around for a long time (as can be confirmed by examination of the 1973 and 1986 Eurobarometer surveys that contain similar questions) but, as figure 1 shows, large gender gaps in unemployment rates are a relatively recent phenomenon. One way to reconcile this is the following idea. When overall unemployment rates are high and there are many applicants for most jobs, employers may be faced with a large number of job applicants who are more or less equivalent. In this situation they are more or less free to indulge any slight discriminatory preferences they may have without suffering any loss in profits from doing so (Becker's [1957] model of discrimination would predict this). In contrast, in tight labor markets, waiting for a male job applicant rather than hiring a female one may be a much more costly strategy. Hence, putting prejudices into practice is easier when unemployment is high and there are long queues for jobs, as has been the situation in most of the high-gap

Table 11
Gender Differences in Flows from Unemployment to Employment

	Controls on Personal Characteristics and Interactions				Controls on Personal Characteristics, Work History, and Interactions			
Country	Coefficient on Female Dummy	Coefficient on Female × Married	Coefficient on Female × Kids0–12	Coefficient on Female × Kids13–15	Coefficient on Female Dummy	Coefficient on Female × Married	Coefficient on Female × Kids0–12	Coefficient on Female × Kids13–15
Spain	−.24	−.066	−.195	.048	−.206	−.139	−.148	.062
	(.064)**	(.101)	(.115)	(.162)	(.064)**	(.101)	(.116)	(.163)
Greece	−.412	−.123	−.455	−.239	−.401	−.117	−.445	−.243
	(.089)**	(.150)	(.192)*	(.230)	(.089)**	(.150)	(.193)*	(.230)
Italy	−.34	−.059	−.17	.13	−.328	−.06	−.234	.081
	(.072)**	(.147)	(.174)	(.216)	(.073)**	(.148)	(.175)	(.216)
France	−.213	−.015	−.438	−.057	−.211	−.051	−.323	−.072
	(.130)	(.199)	(.222)*	(.399)	(.130)	(.199)	(.222)	(.400)
Belgium	−.349	−.367	.076	.022	−.396	−.325	.125	−.175
	(.190)	(.289)	(.343)	(.627)	(.191)*	(.289)	(.344)	(.632)
Netherlands	−.284	−.164	−.819	.742	−.31	−.158	−.708	.668
	(.165)	(.223)	(.251)**	(.400)	(.164)	(.223)	(.253)**	(.404)
Germany	−.051	−.111	−.238	−.128	−.053	−.111	−.241	−.125
	(.098)	(.125)	(.148)	(.237)	(.098)	(.125)	(.148)	(.237)

Denmark	−.521	.245	.336	.437	−.506	.245	.381	.385
	(.173)**	(.246)	(.305)	(.629)	(.174)**	(.247)	(.306)	(.630)
Portugal	−.241	.043	−.123	.191	−.227	.025	−.107	.19
	(.110)*	(.148)	(.170)	(.248)	(.111)*	(.149)	(.170)	(.248)
Finland	.04	−.159	−.058	.192	−.047	−.105	.064	.063
	(.194)	(.256)	(.267)	(.446)	(.196)	(.258)	(.269)	(.448)
Sweden	−.21	−.098	.194	.244	−.21	−.098	.194	.244
	(.138)	(.269)	(.267)	(.399)	(.138)	(.269)	(.267)	(.399)
Austria	.638	−.108	−.836	−1.164	.655	−.223	−.627	−.888
	(.214)**	(.311)	(.317)**	(.575)*	(.218)**	(.312)	(.320)	(.587)
Ireland	.103	.811	.311	.218	.121	.433	.353	.312
	(.131)	(.255)**	(.222)	(.362)	(.132)	(.258)	(.224)	(.369)
United Kingdom	.244	.473	.473	.076	.179	.437	.416	.074
	(.119)*	(.193)*	(.238)*	(.363)	(.121)	(.195)*	(.239)	(.366)

SOURCE.—Data are from ECHPS.

NOTE.—The sample is all those who are unemployed at one interview and employed or unemployed subsequently. Model estimated is a log-log model where the dependent variable takes the value one if the individual is still unemployed. Standard errors are in parentheses. The ILO main activity status is used for Sweden as the self-defined main activity status question, used for the other countries, is not asked.

* Denotes 5% significance level.

** Denotes 1% significance level.

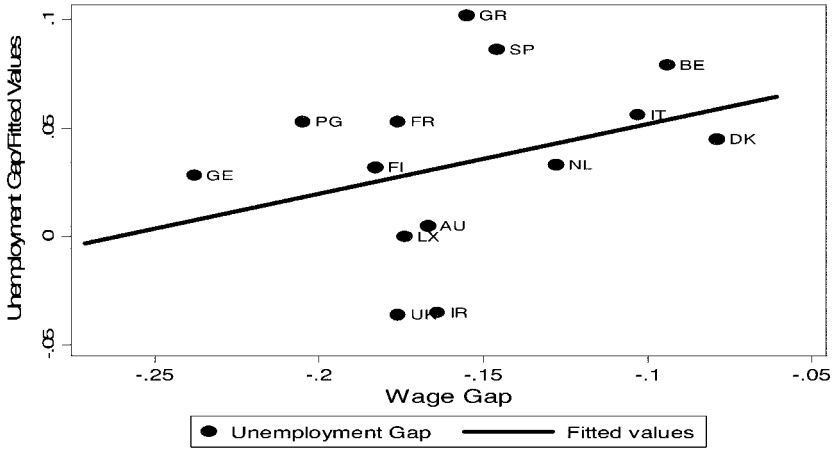

FIG. 3.—The gender gap in unemployment rates and in wages

countries in the 1980s and 1990s.[20] We investigate this hypothesis in the third column of table 13, including the interaction of the male unemployment rate with the attitudinal variable (as well as the level of the male unemployment rate). The interaction term is positive and significantly different from zero.

Finally, another possibility is that there is simply a mismatch between the types of jobs wanted by the female unemployed and the jobs that employers are offering. Perhaps the most plausible form of mismatch is that women may want part-time jobs but these are very rare in some countries.

Table 14 investigates this hypothesis by presenting a comparison of the fraction of the unemployed who say they want part-time work and the share of employment that is part-time. There is no evidence that there is a large disparity between the type of jobs that women want and the type of jobs that are available. For example, in Spain the desire for part-time employment among the unemployed is lower than the incidence of part-time working in the employed population (see also Petrongolo [2004] for evidence that, in high-gap countries a higher proportion of women working part-time report that they would prefer a full-time job which is also consistent with this). It seems more likely that, if there is a deficit of part-

[20] This does not mean that the exercise of such prejudice is costless: to the extent that certain groups are protected from competition for jobs from other groups, the result is likely to be higher wage pressure and a higher natural rate of unemployment. This conclusion is usually derived in the context of prejudice against the long-term unemployed (see, e.g., the "ranking" model of Blanchard and Diamond [1994]), but the same principles apply to other sorts of prejudice.

Table 12
Maternity Leave Legislation, 1999–2000

Country	Maternity Leave			Parental Leave		
	Length (Weeks)	Payment (% Earnings)	Continuation of Payment by Employer	Length (Months)	Maximum Child Age (Years)	Payment
Austria	16	100	Low wage workers	3–24	2	€410/month
Netherlands	16	100	No	6	8	Unpaid
Spain	16	100	No	. . .	3	Unpaid
Luxembourg	16	. . .	No	6	5	€1,487/month
Germany	14	100	No	. . .	3	€306/month
Greece	14	100	No	3.5	3.5	Unpaid
Italy	18	80	No	10	3	30% earnings
France	16–26	84	Yes	. . .	3	€461/month
United Kingdom	14	90	No	3.25	5	Unpaid
Portugal	12.5	100	No	6	3	Unpaid
Denmark	18	67	Yes	2–12	8	€920/month
Finland	17.5	66	Yes	6.5	3	€10/day
Belgium	15	82 first month, 75 rest	No	3	4	€505/month
Ireland	14	70	No	3.5	5	Unpaid
Sweden	12	80	. . .	18	8	80% earnings
United States	12	Unpaid	No	. . .	. . .	. . .

SOURCE.—Cohen (1999).

NOTE.—The Council Directive 92/85/EEC of October 19, 1992, sets a minimum period of 14 weeks (including the 2 weeks before and after birth) of maternity leave. The amount of maternity pay is fixed by the national legislation of the country and should be at least equal to the value of sick pay. There is no EU regulation regarding paternity leave. In most countries this is, at most, just a few days after birth. Council Directive 96/34/EC of June 3, 1996, sets a minimum period of 3 months of parental leave. Both parents have a 3 months entitlement, but one parent cannot transfer the right to parental leave to the other. Payment is legislated at country level. Directive 97/75/EC extends the scope of Directive 96/34/EC to the United Kingdom. For the United States, maternity leave is regulated within the Family and Medical Leave Act (1993). It allows eligible employees (tenure > 1 year) of a covered employer (number of employees > 50) to take unpaid leave (or to substitute paid leave if the employee has earned or accrued it) because of birth/care of a child as well as for health conditions of the employee or family member. In Denmark, payments are based on unemployment benefits. In the United Kingdom, only employees with tenure of more than 26 weeks are eligible for maternity pay. Employees with more than 1 year of employment with the same employer have the right of "additional" maternity leave. In France, parental leave is paid only for workers having two or more children. In Germany, parental leave is paid until the child is 2 years old and for workers below a certain household income.

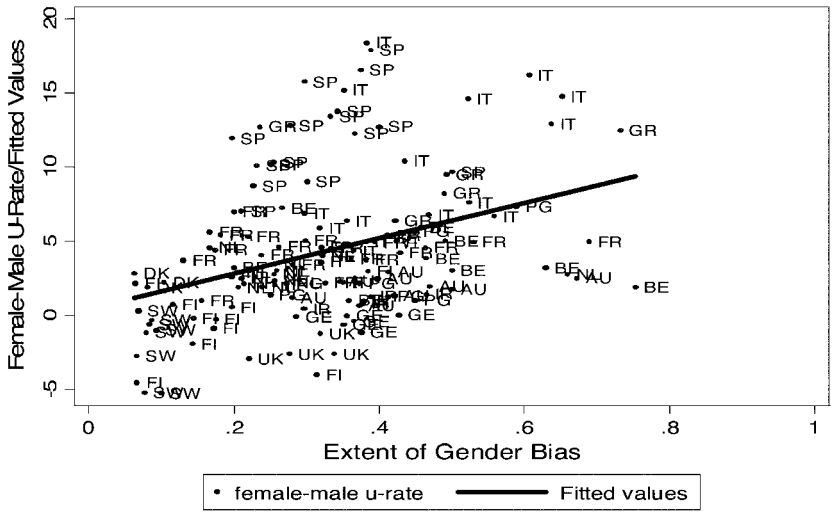

FIG. 4.—Prejudice and the gender gap in unemployment rates

time jobs in some countries, this results primarily in lower female labor force participation and not in higher unemployment rates.

VIII. Conclusions

In many of the European countries with high unemployment rates, the female unemployment rate is substantially above the male. This important gender gap has hardly been studied: remedying that deficiency is the purpose of this article. We show that, in the countries with a large gender gap in unemployment rates, there tends to be a large gender gap in both

Table 13
The Impact of Attitudes on the Gender Gap in Unemployment Rates

	(1)	(2)	(3)
Preference for male employment	11.91	5.71	5.76
	(2.56)	(1.99)	(1.99)
Preference for male employment × (male unemployment rate − 9.6)			1.29
			(.27)
Male unemployment rate			−.16
			(.12)
Constant	.43	2.47	4.18
	(.92)	(.69)	(1.12)
Country fixed effects	No	Yes	Yes
Number of observations	139	139	139

NOTE.—The dependent variable is the gap between female and the male unemployment rate. Each observation is a region in a country in 1996. The variable "preference for male employment" is the fraction agreeing with the statement "when jobs are scarce, men should have more right to a job than women"; this comes from a 1996 Eurobarometer survey.

Table 14
Part-Time Employment

Country	Female		Male	
	Unemployed Wanting Part-Time Work (%)	Employed Working Part-Time (%)	Unemployed Wanting Part-Time Work (%)	Employed Working Part-Time (%)
Spain	7.8	16.5	1.3	2.6
Greece	6.8	5.7	0	2.6
Italy	34.4	12.4	3.7	2.8
France	23.2	30	2.7	5.3
Belgium	20.1	34	2.1	3.2
Netherlands	72.4	68.7	15.3	16.7
Luxembourg	36.1	18.1	0	1.3
Germany	23.7	33.6	3.2	3.3
Denmark	16.3	35.1	0	11.4
Portugal	0	8.3	0	1.6
Finland	7.1	15.2	0	6.5
Sweden	19.4	42.6	2.9	8.3
Austria	44.8	28.7	3.8	3
Ireland	47.2	22.2	0	5.7
United Kingdom	55.1	44.2	5.2	7.5

SOURCE.—Eurostat Labour Force Survey (Eurostat, Luxemburg, 1996).

flows from employment into unemployment and from unemployment into employment. It does not seem necessary to study the flows involving inactivity to understand the gender gap in unemployment rates.

There is a tendency for the gender gap in unemployment rates to be smaller in countries with higher levels of female labor market attachment, to be larger within countries for demographic groups where we would expect the largest gender differences in labor market experience, and to fall over time in countries with rapid growth in female labor market attachment. This points to the importance of human capital differences as an important explanation of the gender gap in unemployment rates.

But this is not perhaps the whole story. Gender gaps in unemployment rates have risen in the past 20 years in many European countries even as the attachment of women to the labor market has risen. It is likely that labor market institutions can explain part of the difference. Institutions that compress wages (like minimum wages or trade unions) or act to the disadvantage of groups with lower levels of labor market attachment (like firing costs and the widespread use of temporary contracts) may magnify the impact of human capital differences on unemployment rates. As the overall level of unemployment is high in many European countries, employers may have long queues of workers for jobs, and this acts to the disadvantage of women, as it makes it easier to indulge in any residual prejudice against women.

References

Abowd, John M., and Arnold Zellner. 1985. Estimating gross labor force flows. *Journal of Business and Economic Statistics* 3 (July): 254–83.

Abraham, Katherine G., and Robert Shimer. 2002. Changes in unemployment duration and labor-force attachment. In *The Roaring Nineties: Can full employment be sustained?* ed. Alan B. Krueger and Robert M. Solow. New York: Russell Sage Foundation.

Algan, Yann, and Pierre Cahuc. 2004. Job protection and family policies: The macho hypothesis. IZA Discussion Paper no. 1192, Bonn.

Altonji, Joseph G., and Rebecca M. Blank. 1999. Race and gender in the labor market. In *Handbook of labor economics*, vol. 3C, ed. Orley Ashenfelter and David Card. Amsterdam: North-Holland.

Ashenfelter, Orley, and John Ham. 1979. Education, unemployment, and earnings. *Journal of Political Economy* 87 (October): S99–S116.

Azmat, Ghazala, Maia Güell, and Alan Manning. 2004. Gender gaps in unemployment rates in OECD countries. Discussion Paper no. 604, CEP, London School of Economics.

Barrett, Nancy S., and Richard D. Morgenstern. 1974. Why do blacks and women have high unemployment rates? *Journal of Human Resources* 9 (Fall): 452–64.

Becker, G. S. 1957. *The economics of discrimination*. Chicago: University of Chicago Press.

Bertola, Giuseppe, Francine D. Blau, and Lawrence Kahn. 2002. Labour market institutions and demographic employment patterns. Discussion Paper no. 3448, CEPR, London.

Blanchard, Olivier J., and Peter Diamond. 1994. Ranking, unemployment duration, and wages. *Review of Economic Studies* 61 (July): 417–34.

Blau, Francine D., and Lawrence M. Kahn. 2003. Understanding international differences in the gender pay gap. *Journal of Labor Economics* 21 (January): 106–44.

Cohen, B. 1999. Parental leave: Progress or pitfall? In *Research and policy issues in Europe*, ed. Peter Moss and Fred Deven. The Hague: Netherlands Interdisciplinary Demographic Institute Publications.

Flinn, Christopher J., and James J. Heckman. 1983. Are unemployment and out of the labor force behaviorally distinct labor force states? *Journal of Labor Economics* 1 (January): 28–42.

Johnson, Janet L. 1983. Sex differentials in unemployment rates: A case for no concern. *Journal of Political Economy* 91 (June): 293–303.

Jones, Stephen R. G., and W. Craig Riddell. 1999. The measurement of unemployment: An empirical approach. *Econometrica* 67 (January): 147–61.

Nicoletti, Cheti, and Franco Peracchi. 2002. A cross-country comparison

of survey participation in the ECHP. Discussion Paper no. 2002–32, ISER, University of Essex, Colchester.
Niemi, Beth. 1974. The female-male differential in unemployment rates. *Industrial and Labor Relations Review* 27 (April): 331–50.
Pellizzari, Michele. 2004. Do friends and relatives really help in getting a good job? Discussion Paper no. 623, CEP, London School of Economics.
Peracchi, Franco. 2002. The European community household panel: A review. *Empirical Economics* 27:63–90.
Petrongolo, Barbara. 2004. Gender segregation in employment contracts. *Journal of the European Economic Association Papers and Proceedings* 2 (April/May): 331–45.
Polachek, Solomon. 2004. How the human capital model explains why the gender wage gap narrowed. Discussion Paper no. 1102, IZA, Bonn.
Ruhm, Christopher J. 1998. The economic consequences of parental leave mandates: Lessons from Europe. *Quarterly Journal of Economics* 113 (February): 285–317.
Weiss, Yoram, and Reuben Gronau. 1981. Expected interruptions in labour force participation and sex-related differences in earnings growth. *Review of Economic Studies* 48 (October): 607–19.